



ULI Sacramento

Clean Power Cities
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On November 16, 2022, the State of California released the world’s first plan to achieve net zero carbon pollution, with a focus on cutting air pollution by 71 percent, slashing greenhouse gas emissions 85 percent, and dropping gas consumption by 94 percent.

In order to achieve those goals, jurisdictions, utilities, and developers will have to drastically change policies, improve infrastructure, innovate energy and transportation technology, and alter the way buildings and communities are designed. On June 9, ULI Sacramento hosted a panel discussion focusing on current progress and future steps needed within the development industry, public sector, and utility suppliers in order to meet California’s energy targets. Panelists shared innovative trends and public policy challenges and discussed how the building industry and utility sectors are responding to these important intersectional challenges.

The State of Electrification

The State of California’s electrification plans are aspirational and will require ongoing collaboration across sectors to ensure that access to upgrades and incentives are readily available and equitable. Partners need to be focused on the end consumer, ensuring that electrification across all households is achievable and that homes remain affordable.

While most of the focus to date has been on the electrification of new construction, the next and perhaps more difficult challenge is the conversion of older buildings. How can that conversion be done equitably and in a way that will not exacerbate the existing housing crisis?

In addition to the positive impacts on the climate, environment, and human health, leveraging net zero can create positive economic development impacts for the region. New technology businesses are attracted to the area, which creates employment opportunity for the region. With intentional efforts, it is possible that these new jobs can also reach underserved residents.

In San Jose, roughly 65 percent of the homes were built before 1980 and will require electrical service upgrades to become fully electric. It can take up to three years to receive approval from the utility company for the additional power required for conversion. If a service upgrade requires up-stream transformer upgrades, costs skyrocket.

The Building Industry Association (BIA) estimates that electrification will cost a homeowner \$5,000 for the components and approximately \$30,000-40,000 for the labor needed to achieve the conversion. The combined

cost – \$35,000-45,000 – raises significant equity issues as few homeowners are in a financial position to pay for these improvements.

Today, all-electric buildings represent roughly two to three percent of the built environment. Policy makers are drafting and supporting legislation and regulations to further spur electrification, and homeowners and builders are slowly moving in the all-electric direction. Yet, there are challenges in the market. The supply of needed materials, a ready workforce, and associated infrastructure is not scaling adequately to meet the pending demand.

- Recently, Sacramento County built 5000 units; only 230 were all electric. Even in the world of all-electric mandates, of 4000 units of new apartments, only 20 were all-electric.
- Builders who want to build all-electric units face supply issues.
- Existing infrastructure doesn’t necessarily support the upgrades.
- Overhead updates can be upgraded relatively easily, but the underground service, which may require an additional or larger transformer on is a challenge.

Key Questions:

- How can we ensure that builders will have all of the component parts to make the conversions?
- How can we ensure that we have the workforce to install and then inspect the installations?



- How can we rectify the historic inequities that regularly placed gas-fired plants in underserved communities and communities of color?

The Region is Meeting the Demand

Utilities in the region, including the Sacramento Metropolitan Utility District (SMUD), are embracing the move to an all-electric environment and making significant strides in meeting the current demand as they plan for significant future demand for electric power. In 2020, SMUD adopted a Climate Emergency Declaration and, in April of 2021, a new Zero Carbon Plan was delivered, outlining how the utility will achieve zero carbon in power supply by 2030, fully 15 years ahead of the state's zero carbon goals. A key ingredient of this plan is customer support through electrification transition, including panel upgrades and upgrading existing systems. The challenge lies in ensuring that the process is affordable, the associated utility rates remain affordable, and the service is reliable.

SMUD is also focusing on the following efforts to assist homeowners in their pursuit of electrification and/or reduced power consumption:

- **Managed charging** – creating load flexibility – is helpful, particularly as it relates to vehicle charging.
- **Time-of-use pricing** has been deployed and customers have responded well. By raising the cost of energy at peak times, overall utility costs can be kept in check and can help lower utility bills in the long run.
- **Messaging** to the public is working to help curtail usage at peak times of day.
- **Smart panels** help manage usage based on needs of an individual home, letting customers set priorities as to which items within their home are prioritized. In other instances, by using smart panels, some homeowners can avoid having to make the service upgrades altogether.
- **Incentives** for panel upgrades and provisions in the Inflation Reduction Act are helping low-income customers lower the cost of upgrades.

- **Reliability and resilience** is important today and into the future. Much of the interruptions in the past have been exacerbated by the electrical system's reliance on large transmission lines. By distributing power generation across the network, local solar, and local batteries – using more local generation points – a more reliable and resilient system is created. Utility-scale battery storage across the territory around load centers will also be a resource.

The region is known for innovation and a number of companies are working to create products and systems that can help homeowners reduce their energy consumption.

- **Distributed energy management.** SMUD is piloting a control system with a distributed energy resource management application built into the system. The utility co-developed the program and is using the revenue from the use of the system in other places to benefit its Sacramento customer.
- **Clean tech.** Sacramento wants to become the clean tech hub and have the revenue from those clean tech innovations come back to benefit the community.
- **Kitchen innovation.** SMUD worked with Microsoft on the commercial kitchen electrification side. For individual homeowners, moving to an induction stove requires a power upgrade from 120 to 240 watts. A local technology company has created a stove that runs off 120 watts and uses a battery to charge up during off times to supply the needed power at the time of cooking.
- **Hydro power.** Hydro power is coming online and the 2023-24 outlook is very encouraging.
- **Solar and batteries.** New solar and new batteries are also coming online. The infrastructure is being installed at a slow but steady pace.
- **Diversification.** Transmission across the state is challenging, which is encouraging localities to bring the resources closer and make it as diverse as possible (water, wind, solar).

Messaging is Critical

The move to electrification requires clear and consistent messaging across business sectors and deep into the general public. The private sector – builders, installers, and tradespeople – will need information and education around the resources, processes, and products to ensure they are able to meet the regulatory requirements and also meet the increasingly-electric needs of their customers. Individual homeowners, many of whom are not able to prioritize electrification, will benefit from information that meets them where they are, at various points in their homeownership journey and in languages that are native to them.

- **Change messaging** – Talk of “watt dieting” to meet climate targets uses a scarcity approach. Flipping that approach to a two-way grid approach could instead put control into consumers’ hands, allowing them to put power back into a home battery system and saving them from pulling power from the grid at other times. This economic benefit might resonate more readily than the current diet/scarcity approach.
- **Health benefits** – Make the case clear for the costs to the health of people in the home. Having a gas appliance in a home leads to increased instances of childhood asthma and is similar to having a smoker in the home.
- **Appliance replacement** – It is also helpful to message around the cost/benefits at the time of appliance replacement/failure during regular homeownership.
- **Contractor messaging/training** – Work with contractors to get them comfortable with the new technology so they are able to provide viable quotes that assist with rather than avoid electrification.
- **General public** – Messaging and education needs to be broadly distributed to the general public. Most people do not see energy savings or conversions as a pressing personal priority.
- **Electric vehicles** – Messaging around electric vehicles needs to highlight the incentives to lower the cost of the vehicles and their relatively low operational (oil, gas, maintenance) costs. Vehicles are creating emissions that are worse than power plants. State has created Clean Cars for All to support lower-income purchaser’s pursuit of EVs.

The industry can also take a cue from the information delivery system used to encourage reductions in water consumption across the region. That campaign was successful and could be modified for messaging electrification.

The Role of the Private Sector

The building industry at large sees itself as an essential partner in meeting the carbon neutral goals and helping customers meet those goals. Generally, individual builders

fall along a wide spectrum when it comes to understanding and embracing electrification. The majority are willing to take a look at electrification, particularly if it reduces their permitting requirements/time. Those builders who are opting in are doing so voluntarily and using incentives from SMUD to offset the associated costs.

The Role of the Public Sector

Elected officials across the region are making careful decisions around electrification regulations, striving to encourage conversions while remaining cognizant of the challenges their constituents will face in the retrofitting process. New construction regulations have been far easier to implement, yet it is time to shift focus to encourage and support building retrofits.

- The City of San Jose conducted a ULI Advisory Services Panel to address the challenge of existing building electrification. The current plan before the city council is a community engagement process, gathering feedback from residents, many of whom are pointing to the high costs associated with service upgrades, more specifically changing out a panel can be difficult and costly.
- Sacramento is the only city in the region with an ordinance in place guiding all-electric new home construction. A number of other California municipalities have adopted ordinances prohibiting new natural gas lines in new construction.
- Looking at the wave of policy on the horizon, everything is pointing toward electrification. It is important to educate policy makers about supply chain challenges and installation issues so that builders can buy and install the products without the potential crush of price increases (often in mandated spaces) that are then passed along to the consumer.
- Cities can play an important role by being flexible with certain permitting matters, *e.g.*, where air handling units are placed outside a home.
- It is also worth exploring how users can share creative installation opportunities across a community. For example, if a building cannot support solar on the roof but a neighboring multifamily building can, can the building owners work together to jointly benefit from the installation and can the municipality provide support or incentives to encourage this creative electrification solutions?

Equity in Electrification

Sacramento County is one of the most diverse counties in the nation, and this important climate changing work should involve, support, and encourage all residents of the region equitably. The electrification pipeline and demand will require everyone at the table to meet the goals. Today, the San Jose community is 25 percent Hispanic and

10 percent Vietnamese. It is important to go into those communities to better understand what they want and need. This work needs to be intentional, clearly stating, “You have been left out; we want you involved.”

Workforce

- Most electricians are white males. The industry needs to reach out into new populations to change the trajectory of how this industry works for and with people of color.
- The BIA Foundation provides job training and is working to get into high schools to train a new generation of construction workers. Progress is being made and they are seeing a new population seeking these jobs.
- An educational campaign could help people understand the benefits of a career as an electrician and help people see themselves in those roles.
- Partners should work with communities to message around training opportunities and specifically training for EV charging installation. Skill is needed for installations and understanding the process – EVSE requires a license above an electrician’s regular certification. Messaging should include:
 1. Educational opportunities and the eventual job opportunities;
 2. Training resources; and
 3. Listings of and connections to available jobs.

Cost/Funding – The cost of upgrading is an equity issue and federal funding is being directed to communities that have been left behind and left out of these conversations and opportunities in the past.

Accessibility – Again, information, messaging, and education about upgrades and available resources must include information presented in languages that are readily spoken in those communities.

What Can Be Done Today?

It is helpful to understand the value proposition of electrification and the economic development benefits of this conversion.

Individually, the most important thing that can be done is to talk about climate change – talk about the changes everyone can make individually to combat climate change, including the new electric stove you bought and how well it works.

At a broader level, the building industry needs to recognize and understand that this is the direction the industry is going, and builders and developers need to come alongside.

Parting Thoughts

Be flexible, be data-driven, and recognize that there is not just one solution. Elected officials should listen to their constituents and conduct thorough community engagement. This is a critical conversation, requiring rich, two-way communication, if we are to achieve systems-level, city-wide clean energy solutions.



Michelle Malanca Frey is a climate strategy consultant, speaker, and writer. Drawing on her 20+ years of experience in environmental and urban sustainability globally, Michelle speaks to audiences and helps organizations and leaders create and communicate climate strategies that make us healthier, safer, and more prosperous

Lora Anguay Sacramento Municipal Utility District, Chief Zero Carbon Officer. Lora is a proven leader with over 19 years in the electric utilities industry. She is currently responsible for leading the transition of SMUD’s power supply to zero carbon emissions by 2030. Her team includes Power Generation, Energy Trading and Contracts, Energy Settlements, Research and Development and Customer Programs. Previously, Lora has had responsibility for Distribution Operations and Maintenance, Business Process Improvements and the work management functions for Distribution Line Design and Construction. Major achievements include leading the deployment of SMUD’s smart meters, leading the implementation of distribution automation, directing the co-development and implementation of an advanced distribution management system and distributed energy resource management system. Lora is a veteran and serves as a board member for the Western Energy Institute and the Sacramento State Foundation Board.

Chris Norem, Director of Governmental and Public Affairs, North State BIA. Chris Norem’s expertise includes government relations, PAC management, campaign strategy and management, message development and coalition building. His experience includes more than two decades in federal, state, and local government and political communications, achieving successful solutions and executing winning strategies for a wide variety of private and public sector clients.

Moderator: **Jose Bodipo-Memba**, Past Chair, ULI Sacramento and Chief Diversity Officer, SMUD